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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/567,900	02/10/2006	Hidetaka Kojima	3273-0219PUS1	2123

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EXAMINER	
WITHERSPOON, SIKARL A	
ART UNIT	PAPER NUMBER
1621	

NOTIFICATION DATE	DELIVERY MODE
05/05/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary	Application No.	Applicant(s)	
	10/567,900	KOJIMA ET AL.	
	Examiner	Art Unit	
	Sikarl A. Witherspoon	1621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 February 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,4,6-10 and 12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4,6-10 and 12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 February 2008* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on February 26, 2009 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 2, 4, 6-10, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hosono et al (US 20060281944), Scates et al (US 6,303,813) or Jones (US 7,098,363) all in combination, and further on view of Miura et al (EP 0687662) and Cheung et al (US 7,005,541).

The claims are drawn to a process for producing acetic acid by continuously reacting methanol with carbon monoxide, in the presence of a homogeneous rhodium catalyst, an iodide salt, methyl iodide, methyl acetate, and water, thereby producing

acetic acid at a certain production rate, while maintaining a low acetaldehyde content, i.e. 500 ppm or less.

Hosono et al teach a method for making acetic acid by carbonylating methanol with carbon monoxide using a heterogeneous catalyst. Hosono et al employ a carbon monoxide partial pressure in the range of 1.0 to 2.5 MPa, preferably 1.7 to 2.2 MPa, wherein the acetic acid productivity decreases when the carbon monoxide partial pressure is below 1.0 MPa. The water concentration is between 2 and 10 wt % (pages 10-12 and claims).

Hosono et al is silent with regard to methyl acetate content and concentration of acetaldehyde in the reactant mixture; however, Scates et al teaches a method for producing acetic acid by a carbonylation process using a *homogeneous* rhodium catalyst with methyl iodide, and also teaches a methyl acetate concentration of from 0.5 to 5.0 wt%, as well as an optimum water content and hydrogen partial pressure for stabilization and rate enhancement (Tables I and II). Jones teaches a faster reaction rate for carboxylic acid production by adjusting methyl acetate concentrations. Regarding the amount of acetaldehyde in the reaction mixture, Miura et al teach a process for producing *high purity* acetic acid by carbonylation of methanol in the presence of a rhodium catalyst, an iodide salt, and methyl iodide, wherein the reaction is conducted while maintaining an acetaldehyde concentration in the reaction medium at 400 ppm or less. The water content is 1 to 5 wt%; the carbon monoxide partial pressure is preferably from 4 to 15 atm. Miura et al also discusses a distillation to separate acetic

acid from reactants, and recirculating compounds like methyl acetate and methyl iodide, and then treating the acetic acid with an ion-exchange resin (see entire document).

Cheung et al is cited to teach further purification steps i.e. by way of plural distillation steps. In view of the cited references, it appears that the instant claims are a combination of known reaction steps and conditions that were combined in an obvious manner, producing expected results. As such, the instant claims are found obvious in view of the combined reference teachings.

Response to Arguments

Applicant's arguments filed February 26, 2009 have been fully considered but they are not persuasive. The thrust of applicants' arguments is that the instant process uses a homogeneous catalyst. With regard to Hosono et al (US '944) applicants argue that the claims as amendment require a homogeneous catalyst, while Hosono et al teach a heterogeneous catalyst, and therefore, Hosono et al constitutes a teaching away from the claimed invention. Therefore, one of ordinary skill would not have looked to a process that teaches a heterogeneous catalyst to cure deficiencies in a process that utilizes a homogeneous catalyst.

The examiner does not find these arguments persuasive. First, Hosono et al teach a carbon monoxide partial pressure that meets the claim limitation and teaches that when the carbon monoxide partial pressure is below 1.0 MPa, the production of acetic acid decreases. Scates et al teach *a homogeneous catalyst* and teaches a methyl acetate content of the reaction mixture at a preferable range of 0.5 to 5 wt % for

a stabilizing and rate enhancement effect. Jones et al was mentioned by the examiner as another teaching that the concentration of methyl acetate in the reaction mixture has an effect on the reaction rate for carboxylic acid production. Finally, Miura et al (US '662) was cited by the examiner as a general teaching that it is of benefit to keep the concentration of acetaldehyde in the reaction mixture low, specifically to 400 ppm or less, and also teaches a water concentration of 1 to 5 wt%.

The combination of reference teachings would have lead a person having ordinary skill in the art to the conclusion that this type of reaction for making acetic acid can be conducted using either *a homogeneous catalyst* or *a heterogeneous catalyst* and still expect acetic acid to be produced. The examiner contends that at the time of the present invention, a person having ordinary skill in the art would have been able to look to the combination of reference teachings and arrive at a process that would have employed a carbon monoxide partial pressure, hydrogen partial pressure, methyl acetate content, water content, production rate and concentration of acetaldehyde that may be contained in the reaction mixture, etc., that would have allowed such a person to derive the best possible reaction parameters for producing acetic acid efficiently, and at a production rate that he or she deemed sufficient. The instant claims appear to be a combination of art-recognized reaction parameters that when employed in unison would have had the obvious and desired effect of enhancing the production of acetic acid while keeping the formation of by-products and initiation of side reactions low. As such, the examiner contends that the rejection of record does indeed render the claimed invention prima facie obvious, since there is no claimed element or combination of

elements that leads to results that a person having ordinary skill in the art would have found unexpected.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sikarl A. Witherspoon whose telephone number is 571-272-0649. The examiner can normally be reached on M-F 8:30-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel Sullivan can be reached on 571-272-0779. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Sikarl A. Witherspoon/
Primary Examiner, Art Unit 1621